

Tender Proposed for
Well Water Pumping System
For IITM, CCCR Housing.
Pune

TECHNO-COMMERCIAL BID for
Well Water Pumping System



INDIAN INSTITUTE OF TROPICAL METEOROLOGY
(An Autonomous Body under the Ministry of Earth Sciences, Govt. of India)

SECTION 1

NOTICE INVITING TENDER

1. Sealed items rate tenders in the prescribed form are hereby invited by INDIAN INSTITUTE OF TROPICAL METEOROLOGY, DR. HOMI BHABHA ROAD PASHAN, PUNE-411 008.
for the following works :-

Name of Works :-

Well Water Pumping System
for **Proposed CCCR Housing.**
At IITM Pashan, Pune

Tender documents can be collected from **the Workshop office of I.I.T.M** during office hours on any working day between 27 -31 January 2011.

2. Pre-bid meeting
In order to explain the desired modality of the works, contractors' scope, proposed system, quality assurance and controls etc.; a pre-bid meeting will be held by the Project Consultants at **Indian Institute of Tropical Meteorology Pune** on 31 January 2011. (11.00 hrs) The explanation brief so given, and clarifications as required by the tenderers shall be confirmed in writing and shall become part of the contract document...
3. Sealed item rate tenders with the name of the work and name of the Tenderer written on the envelope will be received at the **Dispatch Unit of IITM Office up to 8 February 2011 hours on 15 hrs.** Unsealed tenders shall be summarily rejected. The **Techno-Commercial Bid** shall be opened on **9 February 2011 at 14.30 hours.**
4. Time is the essence of the contract. The entire works are required to be completed within **45 days** from the 7th day after the date on which the Owner / Employer issues written orders to commence the work in accordance with the phasing, if any, indicated in the tender documents. The contract program shall commence from the date the work order is issued.
5. The tender is being invited for plumbing, sanitary and external services at CCCR housing, IITM. The work will have to be executed in a phased manner as per the progress of the corresponding civil works. The testing, commissioning and handing over of the system will also be done in a phased manner. In the same way, the defects liability period for the system will also vary. The tender shall make it void. No advice of any change in rate conditions after opening of the tender will be entertained. Contractor should submit 'as-built drawings' before submitting the final bill.

6. Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil, the form and nature of the site of work, the means of access to the site, the accommodation they may require and any risks, contingencies, prevailing regulations, statutory controls and other circumstances which may influence or effect their tender. A tenderer shall be deemed to have full knowledge of the site, whether he inspects it or not and no extra charges consequent on any misunderstanding or lack of such examination or otherwise shall be allowed.
7. The submission of tender will be conclusive evidence that the Tenderers has fully and carefully read this notice and all other documents and has made himself aware of the scope, specifications, drawings, quality and performance requirement of the work to be performed and the equipment, materials (some supplied by Owners) and requirements of contract documents and local conditions and other factors having bearing on the execution of the work.
8. All drawings and specifications issued with the tender must be returned duly stamped & signed on each page / drawing by the Tenderer. After the work is awarded, he will have to enter into a contract with the Owner/Employer for the due execution of works by signing an agreement in accordance with the articles of agreement, general, technical and special conditions of contract, specifications, priced schedule of quantities and the tender drawings shall form part of the contract.
9.
 - a) Tenderer shall check the numbers of the pages of all the documents, and should any page be found missing, or unclear, must notify the Project Manager at once for clarification. No liability for errors in the tender resulting from failure to check the documents will be accepted. Any Tenderer having questions regarding the true meaning of any part of the Tender / Contract documents or who finds discrepancies in, or omissions from, the Tender/Contract documents should get it clarified during the pre-bid meeting.
 - b) The tenderer should read the specifications and study the tender drawings carefully before submitting the tender. In case of any doubt which may in anyway influence his tender pricing, tenderer shall take suitable clarification from the Owners, as no allowance whatsoever will be agreed to, beyond the tender parameters for any alleged ignorance there off.
10. The schedule of approximate quantities for various items accompanies this tender. It shall be definitely understood that these are the estimated quantities only and are not to be taken as actual and final quantities of the work, to be executed by the Tenderer in fulfillment of his obligation under the contract. These quantities are liable to variation up to a

maximum of +/- 25% of the Total Cost of the contract by the Owner / Employer without affecting the Terms of the Contract.

11. The tenderer shall include for the provision of all Labour, Materials (except the materials to be supplied free of cost by the Owner/Employer), Tools, Supplies, Equipment, Services, Facilities, Supervision, Administration, Taxes, Licenses, Permits, Insurance and bonds as may be applicable, incidentals and all other things necessary to perform and incidental to the performance of the work in strict accordance with the contract documents to the satisfaction of the Owner's Consultants and Owner / Employer.
12. Tenderer shall include for unloading, stacking, and hoisting of his own materials and equipment including the materials/stores supplied by Owner/Employer, own scaffolding rig and access equipment, arrangement & distribution on site of temporary electrical, water, and other utility services, protection of adjacent trades; own clean up and trash disposal. Owner/Employer does not warrant supply of electrical, water or other utility services. Tenderer is deemed to have allowed for alternative standby services at his own cost to ensure work progress does not suffer on this account.
13. VAT, Sales Tax, Excise Duty, Octroi, Royalty or any other Tax, works contract tax, Service Tax, and any duty or levy on materials to be supplied by the Tenderer in respect of this contract shall be payable by the Contractor and the Owner/Employer will not entertain any claim whatsoever in this respect. The quoted rate shall be inclusive of all such taxes and be complete.
14. The scope of works requires engineering and / or shop drawings. The successful tenderer will be required to furnish soft copies plus reproducible copy and a given number of copies of all drawings for approval prior to fabrication. The Owner's/ Consultants' approval will not relieve the tenderer from compliance with the contract Agreement, and / or applicable specification requirements.
15. a)The Tenderer should quote in figures as well as in words the rate(s) tendered by him. The amount for each item should be worked out and requisite totals given. The total amount shall be written both in figures and in words in such a way that interpolation is not possible.

b)In case of figures, the word ;Rs.' should be written before the figures of rupees, e.g., Rs. 5.25 and in case of words, the word 'Rupees' should precede. Unless the rate quoted in whole rupees and followed by the word 'only' it should be invariably be upto two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.

c) Please refer to Special Conditions for works.

d) Rates quoted by Tenderer and the amount worked out in figures and words shall be accurately filled in so that there is no discrepancy. If the tender has not submitted in the manner stipulated or contains too many corrections or absurd rates or amount, it will be the prerogative of the Owner/Employer to reject the tender bid.

16. ALL rates shall be quoted on the tender form.

17. a) The progress Schedule will be provided by Owners which gives the period and key milestone for the proposed works. The Tenderer shall fully develop his tender programme taking into account the requirement of the time and progress schedule thus provided.

b) The tenderer shall submit a program with his tender to suit Owners' schedule. This program will demonstrate the periods, sequencing and timing of the works and must show the start and finish dates for each activity as specified.

c) The Tenderers program is to include all activities for which he is responsible, including the preparation of drawings, fabrication of parts, delivery to site, installation, testing, commissioning etc.

18. The E.M.D. of **Rs.35,000/(Rs. Thirty five thousand only)** of the successful bidder will be converted in to security deposit and it will be retained till defect liability of one year.

19. a) Each page of the tender document is required to be signed by the person or persons submitting the tender in token of his/their having acquainted himself/themselves with the Special Conditions, General Conditions of contract, technical specifications and schedule of quantities etc. as laid down. Any tender with any of the documents not so signed will be liable for rejection.

b) If the tender is submitted by a partnership firm, it shall be signed by all the partners of the firm or by a partner who has the necessary authority on behalf of the firm to enter into the proposed contract and attach such Power of Attorney with the tender. Otherwise the tender will be liable for rejection. If the tender is made by or on behalf of Company incorporated under the Companies Act, it shall be signed by their Managing Director or one of the Directors duly authorized on their behalf.

c) With the tender bid, Tenderer should indicate the name(s) of accredited representatives of the Tenderer who would be responsible and authorized to discuss, clarify, negotiate and receive clarification and instruction from the Owner/Employer/ Project manager during post tender opening stage.

IITM Pune
Tender for Well Water Pumping System.

20. All erasures and alternations made while completing the tender must be attested by initials of the Tenderer. Overwriting of figures is not permitted. Failure to comply with of these conditions after opening of the tender shall make it void. No advice of any change in rate conditions after opening of the tender will entertained
21. The Owner/Employer is not bound to accept the lowest tender and reserves the authority to reject any or all tenders received without assigning any reason(s). The Owner/Employer also reserves the right of accepting the whole or any part of the tender .The Tenderer shall be bound to perform the same at his quoted rates.
22. The Successful bidder has to keep a security deposit of **5%** of the ordered value by way of Demand Draft from any **Nationalized Bank** in favour of **Director, IITM Pune** payable at Pune or by **Bank Guarantee from a Nationalized Bank**. The tenders received without EMD are liable for rejection. **The EMD Rs.35,000/(Rs. Thirty five thousand only)** deposited with tender document would be adjusted against the above security deposit and would be retained till defect liability period of one year from the date of successful completion of work as certified by the Institute authorities.
23. The tenderer shall submit a latest valid 'Income Tax Clearance Certificate' and works contract tax and Service tax registration numbers issued by authorities, along with his tender.
24. This notice of tender shall form part of the contract documents.
25. a) The tender for works shall remain open for acceptance for a period of 120 days from the closing date for receipt of tenders.

b) If any Tenderer withdraws his tender before the period mentioned above or makes any modifications in the terms and conditions of the tender unilaterally which are not acceptable to the Owner/Employer, then the Owner/Employer shall without prejudice to any other right or remedy, be at liberty of forfeit the Earnest Money deposited by Tenderer with the tender bid, in full entirety.
26. The Owner/Employer shall not be responsible for, nor shall the Owner/Employer reimburse any expense or loss which may be incurred by any Tenderer in the preparation of the tender.
27. Canvassing in any form in connection with tender is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
28. The tenderer shall when called upon so to enter into and execute agreement to be prepared and completed (Two copies) at the cost of the Tenderer, in the form attached herewith with such modification as may necessary.

29. Tender bid shall be complete with the following :-

- a) Earnest money deposit
- b) Tender form duly signed along with complete tender document including the schedule of quantities and drawings thereof duly signed for acceptance of all terms and conditions.
- c) Deviations/alternations if any, from tender specifications.
- d) Any supplementary detail required for the evaluation of the tender like drawings, technical details etc.
- e) List of works completed and works in hand. Also a list of plant and equipment immediately available deployment on the subject work along and time schedule for bringing same to the site.
- f) Particulars of engineers, technical and administrative staff proposed to be deployed for working at the site along with their qualification and their experience.
- g) Works contract tax and Service tax registration numbers
- h) Latest Income Tax Clearance Certificate.
- i) Company deed/company profile.
- j) Power of Attorney of accredited representative.
- k) The tender can be cancelled by the authorities of the Institute without answering any reasons.

Issued to -

Issued by - **Workshop office IITM, Pashan, Pune.**

SECTION 2

TENDER FORM

Proposed CCCR Housing

At IITM, Pashan, Pune.

IITM Pune
Tender for Well Water Pumping System.

To

IITM, Pashan
Pune

Dear Sir / Madam,

**Tender for
Plumbing, Sanitary, and External Services**

I/We have fully and carefully examined all of the tender documents listed below, and including visiting the project site and verified the existing conditions as they relate to the tender submitted herein. I am/We are familiar with all such conditions and controls affecting the site and local conditions, including the availability of the materials and labour.

I/We have, following the above review and examination, notified the Owner/Employer and Owners' Consultants of conflicts (if any) with prevailing or other pertaining regulations and of conflicts (if any) between the tender documents themselves or the tender documents and observed project site conditions.

I/We are have submitted my/our tender solely upon the tender documents without modification or qualification and bind myself/ourselves if the successful tenderer upon award to execute a Contract Agreement for this tender only.

TENDER DOCUMENTS

Section 1 Notice Inviting Tender
Section 2 Tender Form
Section 3 General Conditions
Section 4 Special Conditions
Section 5 Technical Specifications
Section 6 Schedule of Quantities
Section 7 Tender Drawings

I/We hereby tender for the execution of the works referred to in the aforesaid documents upon the terms and conditions contained or referred to therein and in accordance in all respects with the Specifications, designs, drawings and other relevant details at the rates contained in the Schedule of Quantities and within the period of completion as stipulated.

I/We are capable of executing works at CCCR Housing at IITM, Pune. However, should the management decide to award any one of the works, we will abide by the decision of the Owners.

I/We agree to keep the tender open and valid for a period of 30 days after the closing date for submission of the tender documents. Should the tender be accepted, I/we hereby agree to abide by and fulfill fully the terms, conditions and provisions of the aforesaid documents.

IITM Pune
Tender for Well Water Pumping System.

Signature.....

In the capacity of

duly authorized to sign the tender on behalf of

(In Block Letters)

Date

Postal Address

.....Pin Code

Telephone Nos.

Fax No.

Email

Mobile

SECTION 3

GENERAL CONDITIONS

3.1. Definitions

The following terms shall have the meaning hereby assigned to them except where the context otherwise requires:

3.1.2 'Contractor' shall mean the successful tenderer to whom the contract has been awarded.

3.1.3 'Contract' shall mean the Notice inviting the tender and acceptance thereof and the formal agreement executed between the Contractor and the Owner which shall include the following:

- a. Notice Inviting Tender
- b. Tender Form
- c. General Conditions
- d. Special Conditions
- e. Technical Specifications
- f. Schedule of Quantities
- g. Tender Drawings

All these documents taken together shall be deemed to form one contract and shall be complementary to one another.

3.1.4 'Site' shall mean the actual place in, over or under which work is to be done, allotted by the Owner for Contractor's use.

3.1.5 'Work'

The term "Work" means the work which is undertaken by the Contractor pursuant to the Contract. Work includes but is not necessarily limited to the furnishing of all material, labour, equipment, supplies, plant tools, scaffolding, transportation, superintendence, temporary provisions of every nature, taxes, work contract tax, excise, octroi, insurance, water, electricity and all other services and facilities necessary for the full performance and completion of the requirements of the contract.

3.1.6 'Contract Price' shall mean the sums referred to in the formal agreement or the work order.

3.1.7 'Project Manager'

means Owner's designated representative engaged at site of work who may, for the time being be the executive in charge of the work.

3.1.8 'Act of Insolvency'

means any act of insolvency as defined by the Presidency Towns Insolvency Act or the Provincial Insolvency Act or any amending statute.

3.1.9 'Market Rate'

- a) Materials: Rates as decided by Owner's Representatives which include taxes, octroi, transport and any other handling charges.
- b) Labour : As per Local Administration labour rates notified and fixed from time to time.

3.1.10 'Day'

A "Day" shall mean a day of 24 hours from midnight to midnight irrespective of the number of hours worked in that day.

3.1.11 'Week'

A "Week" shall mean seven days without regard to the number of hours worked in any day in the week.

3.1.12 'Month'

A "Month" shall mean a month of 30 days without reference to the number of days worked during this period.

3.1.13 'Temporary Works'

"Temporary Works" shall mean all temporary works of every kind required in or about the execution, completion or maintenance of tendered works.

3.1.14 'Urgent Works'

"Urgent Works" shall mean any urgent measures which in the opinion of the Project Manager, become necessary during the progress of the works to obviate any risk of accident or failure or which become necessary for security for completing the overall project within the stipulated time.

3.1.15 Singular or Plural/Typographic Errors

Where the context so requires, words implying the singular only also includes the plural and vice versa. Words implying persons include persons and corporations.

Typographic or spelling errors shall not be cause to vitiate the contract.

3.2 Assignment And Sub-Letting

3.2.1 Assignment:

The contractor shall not assign the contract or any part thereof or any benefit therein or thereunder without the written permission of the Project Manager/Owner.

3.2.2 Sub-letting:

The contractor shall not sublet the works without the written consent of the Owner and such consent if given, shall not relieve the Contractor from any liability or obligation under the contract and the Contractor shall be responsible for the acts, defaults and neglects of the Subcontractor, his agents, employees or workmen as fully as if they were the acts,

defaults or neglect of the Contractor or his agents, servants, or workmen. The main civil contractor may sublet this contract to a specialist contractors 'approved by the Consultants'.

3.2.3 Changes in Contractor's Constitution:

Where the Contractor is a partnership firm, prior approval in writing shall be obtained from the Owner before any change is made Owner or his Representative in writing. The Contractor may request for additional copies the cost of which shall be to his account.

3.3 Drawings

3.3.1 Issue of Drawings

Two copies of drawings and specifications duly approved for project will be issued free of charge to the contractor progressively during the contract period and contractor shall arrange for execution of the works and the procurement of materials accordingly. The contractor shall give adequate notice in writing to the owner or his representative of any further drawings or specifications that may be required for the execution of the works or otherwise under the contract.

3.3.2 Copies of drawings to be kept at site

One copy of the drawings furnished to the contractor as aforesaid shall be kept at site and shall at all reasonable times be available for inspection and use by the Owner or his representatives. The contractor may request for additional copies the cost of which shall be to his account.

3.3.3 Issue of further drawings and instructions

The Owner shall have full power and authority to supply to the Contractor from time to time through his representative, during the progress of the works such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the works and Contractor shall carry out and be bound by the same.

3.3.4 Ownership of Drawings:

All drawings supplied to the Contractor are deemed to be the property of the Owner. The Contractor agrees both on behalf of himself and his employees, and sub-contractors, whether during or after completion of the contract not to divulge or use, except for the purpose of this contract, any information contained in the drawings.

3.3.5 Execution as per Drawings:

The Contractor must not vary or deviate from the drawings in any respect while executing the work or executing any extra work of any kind whatsoever unless advised by the Owner.

3.3.6 Plans and Drawings to be submitted by the Tenderer

The Contractor shall submit the following information in triplicate to Project Manager for approval within the time stipulated against each item below:

- A general tentative layout plan of Project plant and equipment for the execution of work within the time period stipulated in schedule, along with the Tender.
- Drawings or prints showing the location of major plant and other facilities which he proposes to put up at the site, including any changes in the general layout, at least 7 days prior to the commencement of the respective work.
- Layout and details of temporary works that the contractor wants to carry out to fulfill his obligation under the contract.

Within 7 days, the Project Manager will give his approval/ comments sufficient to proceed with the work or objections/ instructions to the Contractor based on which the drawings shall be revised and resubmitted for approval by the Project Manager.

3.3.7 Shop Drawing/Product Data/Samples

Contractor shall submit to Owner's Representative any/all shop drawings required to be produced by him as described in the contract documents or as may be necessary for the furtherance of his work.

All submittals shall show design, dimensions, connections, and all other details consistent with the requirements of the contract documents, and shall show adjoining works in sufficient detail as to ensure proper co-ordination therewith the connection there to.

Upon receipt of shop drawings, product data and / or samples Owner shall review and approve or otherwise, but only for conformance with the design concept of the work and information given in the contract documents.

Owner's approval of the specific item shall not be construed as approval of an assembly of which it may be a component, Contractor is deemed to have included for the cost of all shop drawings/product data sheets/samples, in his tender.

Contractors are required to prepare the sample toilets and FHCs (numbers and locations as decided by the Consultants) for approval of Architects / Owners.

3.3.8 As Built Drawings

Contractors shall maintain adequate records of all changes to the works as shall from time to time be required by the Owner. Contractor shall prepare accurate and complete as built drawings of the work as constructed. Such drawings shall include all concealed Project, field changes, and other details not indicated in initial Contract Drawings.

Contractor shall supply, in addition to soft copies, one (1) reproducible and two (2) ammonia prints of each as built drawing, to the Owner Representative. Final payment to Contractor shall depend in part upon receipt and approval of all necessary as built drawings.

Contractor is deemed to have included for the cost of production of as built drawings in his tender.

3.4 General Obligations

3.4.1 Site and Local Conditions

By executing the contract, the Contractor represents that he has visited the site of the proposed work, fully acquainted and familiarized himself with the conditions as they exist and the character of the operations to be carried out under the proposed Contract and made such investigations as he may deem fit so that he shall fully understand the facilities, physical condition and restrictions attending the work under the Contract. The Contractor also agrees that he has carefully examined the drawings, specifications and associated documents and the site, and that from his own investigation he has satisfied himself as to the nature and location of the work, the general and local conditions, and all other matters which may in any way effect the work or its performance, and that as a result of such examination and investigation he has fully understood the intent and purpose of the contract documents. Claims for additional compensation or extension of time because of Contractor's failure to follow the foregoing procedure and to familiarize himself with the Contract Documents and all conditions which might effect the work shall not be allowed.

3.4.2 Sufficiency of Tender:

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices stated in the priced bill of quantities and the schedule of rates and prices, if any. The tender rates and prices shall cover all his obligations under the Contract and all matters and things necessary, for the proper completion and maintenance of the work.

3.4.3 Clarification before submitting tenders:

Should the Contractor notice any discrepancy or error in the statement made, or quantities or units shown against items, he shall immediately bring same to the notice of the authorities and obtain clarification during the pre-bid meeting, before submitting the tender. The tender shall be

based on such clarifications received and shall be recorded as such in the covering letter to the Tenderer, failing which the Owner shall have the right to ask the Contractor to execute the work according to the statement made or quantities or units shown in the tender, without any compensation.

- 3.4.4 Rates quoted for finished work
The rates quoted in the tender by the Contractor must be for the finished work as per Contract Documents. Refer to special conditions for supply of materials by Owners.
- 3.4.5 Location of Work
Unless specifically mentioned in the items, the work described therein may be at any location or elevation.
- 3.4.6 Program of work
Within Ten (10) days of the award of contract, the Contractor shall submit to the Project Manager for his approval a program (to match the Owners schedule of completion) to accord with the planned completion of the whole jobs showing the order of procedure and method in which he proposes to carry out the works and shall whenever required by the Architect/Owner Representative furnish further detailed programs and particulars in writing of the Contractor's arrangements for carrying out the works and of the Project, plant and temporary works which the Contractor intends to supply, use or construct as the case may be. The submission to, and approval, if any, by the Architect/Owner Representative of such programs or particulars shall not relieve the Contractor of any of his duties or responsibilities under the contract.
- 3.4.7 Contractor's Employees
The Contractor shall provide and employ at site in connection with the execution and maintenance works; only such technical assistants as are skilled and experienced in their respective callings and such sub-agents, foreman and leading hands as are competent to give proper supervision to the work they are required to supervise and, the Contractor shall employ labour in sufficient number and skill, either directly, or where permitted and approved in advance through sub-contractors, to meet the required rate of progress and quality, and to the satisfaction of the Owner's Representative.
- 3.4.8 Removal of Workmen
The Owner shall be at liberty to object to and require the Contractor to remove forth with from the works any person employed by the Contractor in or about the execution or maintenance of the works who in the opinion of the Owner's Representative misconducts himself or is incompetent or negligent in the proper performance of his duties or whose employment is otherwise considered by the Owner Representative to be undesirable and such person shall not be again employed upon the works without the written permission of the Owner's Representative. Any person so

removed from the works shall be replaced by the Contractor without delay by a competent substitute approved by the Owner's Representative.

3.4.9 Communication to be in writing

All references, communications, correspondence made by the Owner's, and Owner's Representative or the Contractor concerning the works, shall be in writing and no reference, communication, or complaint which is not in writing, shall be recognized. All such communications shall be directed in the first instance through the Project Manager at the Project Office.

3.4.10 Occupation and use of land

No land, building belonging to, or in the possession of, the Owner shall be occupied by the Contractor. The Contractor shall not use, or allow to be used, the site for any purpose other than that for executing the works

3.4.11 Contractors Site office/stores

Any site office or shed, proposed to be temporarily constructed by the Contractor for his office work, storage of materials etc. shall conform to the standard sketch, or to the plan approved by the Owner's Representative. Permission for the Project of such office or shed shall be obtained in writing as well its location on site.

3.4.12 Materials, Tools and Plant

All materials required for the execution of the works, except the materials mentioned in Special Conditions, shall be supplied by the Contractor. All direct/indirect costs associated therewith are deemed to be included in Contractor's tender. Materials so supplied shall have the approval of the Project manager before incorporation within the works, and shall be in the entire conformity with all relevant specifications.

Rejected materials shall be removed at once from the site of Work at Contractor's Cost.

Contractor shall supply all Tools, Tackle and Equipment including but not limited to compressors, concrete mixers, cranes, vibrators. pumps, welding and pneumatic equipment, tar boilers etc., required for the safe and effective execution of the works.

No claims for delay or additional costs shall be allowed arising out of Contractor's failure to supply or obtain timely approval for his materials, or for their insufficiency or unavailability.

3.4.13 Tollages etc

The contractor shall pay all tollages and other royalties, rent and other payments or compensations, if any, arising out of obtaining stone, gravel, sand, clay and all other materials required for the works.

3.4.14 Setting Out

The Contractor shall be responsible for the true and proper setting of the works and for correctness of the position, levels, dimensions, and alignment of all parts of the works and for the provisions of all necessary instruments, appliances, and labour in connection there with. If at any time during the progress of the works any error shall appear or arise in the position, level, dimensions or alignment of any part of the works, the Contractor on being required so to do by the Project Manager or his representative, shall at his own cost rectify such errors to the satisfaction of the Project manager or his representative. The checking of any setting out or any line or level by the Project Manager or his representative shall not in any way relive the Contractor of his responsibility for the correctness thereof, The Contractor shall provide all necessary instruments, appliances, and labour required by the Project Manager or his Representative for checking, if any, of the setting out. The Contractor shall carefully protect and preserve all bench marks, site levels pegs and other things used in setting out of the works. The rates quoted for the work shall also include the cost of all reference and level pillars and their dismantling when no longer required.

3.4.15 Field Dimensions

Before ordering any materials or doing any work, the contractor shall verify the pertinent field dimensions for the project and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of differences existing between actual dimensions and dimensions indicated on the Drawings. Any differences which may be found shall be submitted to the Project Manager for consideration before proceeding with work.

3.4.16 Damage to persons, property and adjacent multistoried structure

The Contractor shall indemnify and keep indemnified the Owner against all losses and claims for injuries or damages to any person or property or adjacent multistoried structure whatsoever which may rise out of or in consequence of the Project and maintenance of works and against all claims demands, proceedings, damages, costs, charges, expenses, whatsoever in respect thereof in relation thereto.

3.4.17 Co-operation with other Agencies

The Contractor shall cooperate with the work of other agencies or contractors that may be employed or engaged by the Owner so far as it relates to the Contractor's work. The sequence of work shall be so arranged that the work of other agencies enabled to progress simultaneously and in a coordinated manner.

In the event of conflict, the decision of the Project Manager shall be final and binding.

The contractor shall programme his activities of works, related to the programme/progress of civil works simultaneously. He shall also ensure that the details related to the structure are supplied to the civil contractor

well in advance and sleeves or pipes/fittings to be fixed in the structure are kept before execution.

3.4.18 Barricading/Safety Precautions

Contractor shall provide around all excavations, of whatsoever nature, temporary barricades and/or fencing including warning signs, signals, notices and lights as appropriate to the particular situation, and of a sufficiency and strength suitable for said situation. Same shall be maintained continuously until the particular hazard is ended. In like manner same shall be maintained at, but not necessary be limited to, such works as demolition dismantling, structural erection and sheeting.

Use of helmets shall be compulsory for all labour, staff and visitors to the site.

Any direction/instruction deemed necessary and issued by the Owner's Representative in this regard shall be immediately executed by the Contractor.

Such directions/instructions shall not relieve the Contractor of his entire responsibility under this or any other relevant clause of the Contract.

Contractor is deemed to have allowed for all direct or associated costs arising therefrom, when tendering for the work.

3.4.19 Watching and Guarding

The Contractor shall provide and maintain at his own expense, all lighting, guards, fencing, warning notices, and watching wherever and whenever necessary to ensure the safe and effective execution of the works, or as required by the Owner's Representative, and to ensure the safety of all persons employed on the work in whatever capacity, all visitors to the works, and members of the general public within or adjacent to the works.

Any instruction/requirement of the Owner's Representative with regard to safety shall not relieve Contractor of his absolute responsibility under this or any other relevant contract condition.

3.4.20 Protection of Underground Services:

The Contractor must make himself aware of the location of and take all precautionary measures to protect existing and new underground and other services lines, (viz. cables, water and sewer lines etc.) and carry out any specific instructions which may be given in this regard by the Project Manager. Should Contractor damage such existing service/s, he shall rectify the said damage in a manner to be agreed with the respective Consultant / Statutory authority and at no cost to the Owner.

3.4.21 De-watering trenches and pits:

The tendered rate shall be deemed to have taken into account the cost of removal of soil and materials that may slip into the trench and/or pit and de-watering the trenches or pits of water accumulated or collected through seepage or subsoil water or rain water. The Contractor shall in no case be entitled to claim any extra amount for the above work. The Contractor shall remain prepared with necessary pumps and equipment for de-watering the trenches or pits so as to avoid unnecessary delay and possible damage to property etc. Any removal/replacement/re-compaction of soils is deemed to have been included in the tender price.

3.4.22 Work in or around operating plant or offices etc.

Where the work is being carried out in or around an operating plant where the plant must run uninterrupted the contractor shall work only at specified places and times as mutually arranged between the Contractor and Project Manager. Similar arrangements must be made while executing works inside the offices, building etc., so as not to cause disturbance to the office work. Due to this work may be required to be done during off-hours and Sundays. No extra will be allowed beyond the rates quoted for doing work in the manner described above.

3.4.23 Work in shifts and off-days

The Contractor shall work in one or more shifts as well as Sundays and holidays to complete the work in time, if so required by the Project Manager for which the Owner shall not be liable to pay any extra.

3.4.24 Site Order Book

A site order book must be maintained and always be available at site to record the instructions of the Project Manager and the Owner or his Representative. The Contractor must see that the instructions noted therein are properly carried out.

3.4.25 Contract Signing

After acceptance of the tender, the Tenderer shall sign the necessary contract papers within 10 days of the intimation. Expenses for the agreements including cost of stamp papers etc. shall be borne by the Contractor.

3.4.26 Site to be Kept Clear

Contractor shall be entirely responsible for prompt removal from site of all surplus excavated materials, spoil, and debris/deleterious materials of whatever nature. This removal shall be carried out on a repetitive basis, and subject if necessary to the instructions of the Owner's Representative. Said instructions shall be binding upon Contractor, but shall not relieve him of any of his obligations under the Contract. Contractor shall be responsible for selection of the place of disposal which shall be legally authorized for that purpose. Contractor shall defend, indemnify, and hold harmless the Owner from any and all losses, damages, expenses fines, etc. that Contractor may incur if in violation of such requirement.

Contractor is deemed to have allowed for all associated costs in his tender.

3.4.27 Conflict in meaning between General Conditions of Contract and the Special Conditions

In case of any inconsistency / discrepancy between the General Conditions of Contract and the Special Conditions, the Special Conditions of Contract shall have precedence over the General Conditions. Similarly, the detailed drawing shall have precedence over the general / layout drawing.

3.4.28 Complementary Contract Documents

The Contract documents are complementary and are intended to include or imply all items required for the proper execution and completion of the work. That required by any one shall be as binding as if required by all. In the event there are any discrepancies between individual documents/article/s, then whichever is the more stringent shall prevail. Any errors in description, quantity, or rate shall not vitiate the Contract or release the Contractor from the executions of the whole or any part of the work comprised therein, or any of his obligations under the Contract.

3.4.29 Administration- Project Manager/Owner's Representative

The Owner's Representative will provide administration of the Contract as hereinafter described;

The Project Manager will be the Owner's Representative during Project and until the final completion of the project. The Project Manager will advise and consult with the Owner. All instructions to the Contractor shall be forwarded by the Project Manager. The Project Manager will have the authority to reject the Contractor's work which does not conform to the Contract documents and to call for any necessary inspection and testing.

The Project Manager will determine in general whether the work of the Contractor is being performed in accordance with the Contract documents.

The Owner/Project Manager shall at all reasonable times have free access to the work and/or to the work-shops, factories or other places wherever work is in preparation or progress and also to any places wherever the materials are located or from which they are being obtained, and the Contractor shall afford every facility to them and any of their representatives that may be necessary for inspection, examination and testing of the materials and workmanship. If the work is to be done at a place other than the site, the Contractor shall obtain the written permission of the Project Manager/Owner for doing so. With the exception of representatives of the Public Authorities, persons not concerned with project or any other unauthorized person shall not be allowed on the project at any time without the written permission of the Project Manager.

The Project manager will visit the site as may be required, during Project to determine in general if the work is proceeding in accordance with the drawings and the specifications. However, the Project Manager will not make exhaustive or continuous on site inspections to check the quality or quantity of the work, replacement of work.

Neither the Owner nor the Project Manager will be responsible for the acts, omissions or performance of the Contractor, it being expressly understood that neither the presence nor the absence of the Owner or the Project Manager on the job, shall relieve the Contractor from responsibility for removal and replacement of work not in accordance therewith.

The Project Manager will schedule and coordinate the work of all the Contractors on the project including their use of the site.

The Project Manager will record the measurement of the works carried out by the Contractor in proper measurement books, jointly with the Contractor whenever possible. The Contractors shall submit four copies of all their bills, including final bills, to the Project Manager. After checking and verification, the Project Manager will then make recommendations to the Owner along with the amount due to the Contractor and will issue a Certificate of payment incorporating such amount.

3.4.30 Patent Rights

The Contractor shall indemnify the Owner against all claims in respect of patent rights and shall defend all actions arising from such claims unless he has informed the Project Manager before of any such infringement and received his permission to proceed, and shall himself pay all royalties, license fees, damages, costs and charges that may be legally incurred in respect thereof.

3.5 Labour

3.5.1 Labour Rules

In respect of all labour directly or indirectly employed on the works by the Contractor, the Contractor, shall comply with the provisions of the Contract Labour (Regulation and Abolition) Act 1970, Minimum Wages Act 1948, payment of Wages Act 1936 and any amendments thereof and all legislations and rules of the State and/or Central Government or other local authority, framed from time to time, governing the protection of health, sanitary arrangements, wages, welfare and safety for labour employed on works and for bonus, retirement retrenchment/lay off compensation, and all other matters involving liabilities of Employers to Employees. The rules and other statutory obligations with regard to fair wages, welfare and safety measures, maintenance of register etc. will be deemed to be part of the Contractors obligation under the Contract. The Contractor shall indemnify the Owner against any payments to be made under the observance of the above regulations without prejudice to his right to claim indemnity from his sub-contractors.

The E.S.I. (Employees State Insurance) charges, if applicable, shall be borne by the Contractor.

3.5.2 Accident Reporting

The Contractor shall be responsible for the safety of all employees and/or workers employed or engaged by him on and in connection with the works and shall forthwith report all cases of accidents to any of them, whoever caused and whenever occurring to the authorities concerned as required by law and to the Owner/Project Manager and shall make every arrangement to render all possible assistance and aid to the victim of the accident. Owners / main employer shall not be accountable to any accidents at site, in any manner.

3.5.3 Provision of Workmen's compensation act.

The Contractor shall at all times indemnify and keep indemnified the Owner against all claims for compensation under the provisions of the workmen's compensation act 1923 or any other law for the time being in force by or in respect of any workmen employed by the Contractor in carrying out the Contract and against all costs and expenses or penalties incurred by the Owner in connection there with. In every case in which, by virtue of the provisions of the said Act, the Owner is obliged to pay compensation to a workman employed by the Contractor in executing the works, the Owner shall recover from the Contractor the amount of the compensation so paid, and without prejudice to the rights of the Owner under the said Act. The Owner shall be liberty to recover such amount or any part there of by deducting it from the Retention Money or from any moneys due by the Owner to the Contractor, whether under this contract or otherwise without prejudice to any other remedy that may be available to the Owner in law. The Owner shall not be bound to contest any claim made against it under the said Act, except on the written request of the

Contractor and upon his giving to the Owner full security for all costs for which the Owner might become liable in consequence of contesting such claim.

- 3.5.4 Accident or injury to Workmen
The Owner shall not be liable for or in respect of any damages or compensation payable by law in respect of, or in consequence of any accident or injury to any workmen or other person in the employment of the Contractor or his Subcontractor, and the Contractor shall indemnify and keep indemnified the Owner against all such damages and compensation, and against all claims, demands, proceeding costs, charges and expenses whatsoever in respect thereof or in relation thereto.
- 3.5.5 Preservation of Peace
The Contractor shall take requisite precautions to prevent any riotous or unlawful behavior by or amongst his workmen and/or others employed on the works by him, for the preservation of peace and protection of the inhabitants and security of property in the neighborhood of the works.
- 3.5.6 Age Limits of Labour:
The age limit of employment of labour shall be in strict accordance with the existing labour regulations.
- 3.5.7 Report of Labour Employed:
The Contractor, shall submit the Daily Labour Report to the Project Manager.
- 3.5.8 Observance by Sub-Contractors:
The Contractor shall be responsible for the observance of the provisions of aforesaid clauses by the Subcontractors employed by him in the execution of the contract.
- 3.6. Material Tests And Workmanship
- 3.6.1. Quality of Materials, Workmanship and Tests:
All materials and workmanship shall be of the respective kinds described in the contract and in accordance with the Owner/Project Manager's or his Representative's instructions and shall be subjected from time to time to such tests as the Project Manager or his Representative may direct at the recognized testing laboratory, approved by the Project Manager or on the site. The Contractor shall provide such assistance, instruments, machines, labour and materials, as are normally required for examining measuring, and testing any work and the quality, weight or quantity of any material used, and shall supply samples of materials before incorporation in the works for approval as may be required by the Project Manager or his Representative.
- 3.6.2. Project of Prototypes or Samples of Work

The Contractor shall construct prototypes or samples of work as laid down in the Contract, or as instructed by the Project Manager. Such prototypes or samples of work, after approval by the Project Manager / Owner shall serve as the standards to be achieved in the final Project.

3.6.3. Cost of Samples:

All samples shall be supplied by the Contractor at his own cost.

3.6.4. Cost of Tests:

The costs of all testing mandated by the specifications shall be borne by the Contractor and are deemed to be included in his tender.

Contractor shall take samples - where applicable - for said tests, from locations determined by the Owner's Representative.

At all times, Owner's Representative and/or Project manager shall be afforded the facility to witness such sample taking and testing.

Results of tests shall be presented in written form, in duplicate, to the Owner's Representative.

3.6.5. Inspection of Operation

The Owner's Representative or any persons authorized by them, shall at all times have access to the works and to the site and to all workshops and places where work is being prepared or where materials, manufactured articles or machinery are being obtained for the works; and the Contractor shall afford every facility for, and every assistance in obtaining such access.

3.6.6. Examination of Work before Covering up:

No work shall be covered up or put out of view without the approval of the Project Manager and the Contractor shall afford full opportunity to the Project Manager to examine and measure any work which is about to be covered up or put out of view thereon.

3.6.7. Uncovering and Making Openings:

The Contractor shall uncover any part of the works or make openings in or through the same as the Project Manager may from time to time direct and shall reinstate and make good such part or parts to their satisfaction. If any such part or parts have been covered up or put out of view after examination and are found to be executed in accordance with the Contract; the expenses of uncovering, making openings in or through, reinstating and making good the same shall be borne by the Owner, but in any other case all such expenses shall be borne by the Contractor and shall be recoverable from him by the Owner and deducted by the Owner

from any money due or which may become due to the Contractor, without prejudice to any other remedy that may be available to the Owner in law.

3.6.8. Removal of Improper Work and Materials

The Owner or his Representative shall during the progress of the works have power to order in writing from time to time:-

The removal from the site within such time or times as may be specified in the order, of any materials which in the opinion of the Project Manager or his Representative are not in accordance with the Contract.

The substitution of proper and suitable materials.

The removal and proper re-execution (notwithstanding a previous test thereof or interim payment thereof) of work which in respect of materials or workmanship is not in the opinion of the Project Manager or his Representative in accordance with the Contract.

3.6.9. Suspension of work:

The Contractor shall, on the written order of the Owner/Owner's Representative suspend the progress of the works or any part thereof for such time or times and in such manner as the Owner's Representative may consider necessary and shall, during such suspension, properly protect and secure the work, so far as is necessary in the opinion of the Owner/Owner's Representative.

3.7. Times Of Completion, And Taking Over

3.7.1. Possession of Site:

Save in so far as the Contract may prescribe the extent of portions of the site of which the Contractor is to be given possession from time to time and the order in which such portions will be available to him and subject to any requirement in the contract as to order in which the work shall be executed, the Project Manager shall give to the Contractor possession of so much of the site as may be required to enable the Contractor to commence and proceed with the Project of the works in accordance with such reasonable proposals of the Contractor as he will make in writing to the Project Manager and shall, from time to time as the work proceeds, give the Contractor possession of such further portions of the site as may be required to enable the Contractor to proceed with Project of the works in accordance with the said programme or proposal.

3.7.2. Time of Completion:

The whole of the works shall be completed within **45 days** from the seventh day of receipt of written order by the Contractor or within such extended time as has been allowed by Owners.

3.7.3. Extension of Time (Liquidated Damages)

3.7.3.1. If the Contractor fails to complete the works and clear the site on or before the time of completion or extended period for such completion, he shall without prejudice to any other right to the Owner on account of such breach, pay to the Owner compensation to the extent stipulated as liquidated damages a sum at the rate of 1 % of the total contract value per week of delay up to a maximum of 10% of the total contract value of the work.

3.7.3.2. If Contractor delayed the execution of the work by unusually severe weather conditions, strikes, acts of God, or other causes beyond the control of the Contractor, such delay may entitle Contractor to an equivalent extension of time, provided that Contractor has taken reasonable precautions foresee, prevent, and to mitigate delays due to such causes, and provided Contractor has given written notice as required.

Under no circumstances shall delays attributable to such causes result in the entitlement of Contractor to any additional compensation or damages for delays and Contractor hereby expressly waives the right to claim any such additional compensation or damages.

3.7.3.3. Should the amount of extra or additional work of any kind, or changes in scope of work or other special circumstances of any kind whatsoever which may occur, be such as fairly to justify the contractor's request for extension of time for the completion of the works, the Owner shall determine the amount of such extension and shall intimate this to the Contractor in writing.

The compensation recoverable from the Contractor attributable to such causes, shall be strictly limited to the contractor's additional costs solely caused by such delay, of maintaining personnel and equipment that are stationed at the job-site, and that are essential to complete the work, and such compensation shall not include consequential damages, loss of profit, extended office overhead, damages resulting from increased material or labour costs damages resulting from reduced labour efficiency, additional costs, caused wholly or in part by any other causes, or other costs of damages of any other kind, and contractor hereby expressly waives the right to claim any such additional compensation or damages.

3.7.3.4. In the event that Contractor delayed the executing of the Work, Contractor shall give Owner/Project Manager, written notice of the occurrence of the cause within five (5) business days after the commencement thereof and keep Owner/Project Manager continuously informed in writing with respect thereto until the delay has terminated. If Contractor fails to give such notice within the time specified, Contractor shall be deemed conclusively to have waived its right to an extension of time for performance of the work, and any consequent allowable additional compensation based upon such cause.

The length of the extension of time, if awarded, shall not exceed the number of calendar days that the execution of Contractor's critical path activities

actually were delayed by such cause. When the Contractor experience for concurrent delays, one executable as defined, the other compensated and no compensation other than time extension will be allowed.

3.7.4. Practical and Virtual Completion:

As soon as the Contractor considers work is practically completed he shall give notice of such completion to the Project Manager. Within fifteen (15) days of the receipt of such notice, the Project Manager shall inspect the works, or those portions, thereof notified by the Contractor as practically complete. After such inspection, the Project Manager shall within ten (10) days issue a list of defects and /or deficiencies for correction by the Contractor and - at his entire discretion confirm, or otherwise, that the work is practically complete.

The Contractor shall rectify all defects/make up all deficiencies in so far as it is practicable not later than thirty (30) calendar days after receipt of the list of defects/deficiencies from the Project Manager. Upon completion by the Contractor of all defects/deficiencies - in so far as it is practicable, - Contractor shall inform the Project Manager. The Project Manager shall within ten (10) days re-inspect the works and at their entire discretion certify the works as complete and issue a Virtual Completion Certificate. The date of issue of the Virtual Completion Certificate shall constitute the date at which the defects liability/Maintenance period starts.

The Work shall not be treated as Completed until:-

The site is clear from all materials, site shed etc. and the Project Manager /Owner is satisfied with the job done by the Contractor.

The Contractor has submitted the reconciliation statement regarding the stores received from the Owner, and all the surplus and salvaged materials are returned to the Owner's stores, and the Owner has agreed to the same.

All equipment, tools, plants etc. if any taken from the Owner has been returned by the Contractor.

Any other material, taken on loan/transfer from any other agency have been returned by the Contractor.

All power and water supply connections taken for the execution of the works have been disconnected by the Contractor, and left in a safe condition to the satisfaction of the Owner's Representative.

Rectification of any damage done by the Contractor to the Work executed has been satisfactorily made good by the Contractor.

3.7.5. Occupation of All or Part of the Works for Owners convenience:

The Owner shall have the right to use or occupy all, or any portion of the work before the work is accepted as finally completed, excepting only that Project Manager shall inspect those parts of the Works to be occupied by the Owner, and issue to Contractor a List of Defects/Deficiencies outstanding, prior to occupation by Owner. With this sole exception, such occupation shall not relive Contractor of any of its obligations under the Contract.

3.7.6. Defects Liability/Maintenance Period:

The Defects Liability/Maintenance period shall commence from the date of issue of the virtual completion certificate, and shall extend for a period of Twelve (12) Months. The Contractor's liability shall be to replace the defective parts, rectify/reconstruct the defective work that may develop because of his own work or those of his subcontractor approved by the Owner arising from faulty material or workmanship or for any other reason. The Contractor's liability shall include all material supplied free of cost by the Owner/Employer and accepted by the Contractor.

If it is necessary for the Contractor to rectify/reconstruct any defective portions of the work under the contract, the provision of this condition shall apply to the portions of work so replaced or renewed until the expiration of three months from the date of such replacement or renewal or until the end of the above mentioned period of twelve months, whichever may be later. If any defects are not remedied within a reasonable time the Owner may proceed to do the work at Contractor's risk and expense, but without prejudice to any other rights which the Owner may have against the Contractor in respect of such defects.

The Contractor shall bear the cost of such repairs/rectification carried out on his behalf at site. Immediately upon expiry of the maintenance period the Owner shall issue a final certificate indicating that the Contractor has completed his obligations under the contract.

3.8. Termination Of Contract:

Recourse by Owner

3.8.1. Failure of Performance -Cures and remedies

If Contractor at any time refuses or neglects to supply enough properly skilled workers and proper materials, or fails properly and diligently to execute the works, or fails to make prompt payment to its workers, Subcontractors, or Suppliers or becomes delinquent with respect to contributions or payments legally required to be made to any statutory Authority or otherwise is guilty of a material breach of a provision of this Contract, and fails within forty-eight (48) hours after receipt of written notice from Owner to commence and continue satisfactory correction of such default with due diligence, then Owner without prejudice to any other rights or remedies shall have the right to any or all of the following remedies:

Owner may terminate Contractors right to perform under this Contract and Owner may use any materials, implements equipment, appliances or Tools procured by, furnished by, or belonging to Contractor to complete the work, without further compensation to Contractor for such use.

Obtain such number of workers and quantity of materials, equipment and other facilities as Owner deems necessary for the completion of the work or that part thereof which Contractor has failed to complete and perform, and charge all costs thereof plus a mark up of Twenty (20%) percent.

Contract with one or more alternative Contractors to perform the work as Owner shall determine will provide the most expeditious completion of the total work, and charge the cost thereof plus a mark up of ten (10%) percent for overheads and five (5%) for profit on such costs, plus any actual legal fees.

Withhold payment of any compensation due or to become due to Contractor pending corrective action to the extent required by, and to the satisfaction of, the Owner.

Make payments directly to Contractors Subcontractors or Suppliers or to others who may have Bond rights, and to charge the amount/s thereof to the Contractor.

In the event of an emergency effecting the safety of persons or property the Owner may proceed as above without notice.

3.8.2. Grounds for Withholding payments:

Owner may withhold the whole or part of any compensation due to Contractor to the extent necessary to protect Owner from loss on account of any breach of Contractors obligations under the Contract. When the cause for withholding is rectified, such amount as then due and owing shall be paid or credited to the Contractor.

3.9. Bankruptcy or Insolvency

3.9.1. Termination

If a Receiver for Contractor is appointed, or if Contractor makes an assignment for the benefit of its creditors, or if Contractor become insolvent, Owner may terminate the Contract by giving Forty-Eight (48) hours written notice to Contractor and its Surety -if any. If any order relief - if relevant - is entered with respect to Contractor, Owner may terminate the contract by giving Forty-Eight (48) hours written notice to Contractor, its Trustee, and its Surety - if any, unless Contractor, the Surety, or the Trustee - a) Promptly cures all defaults, b) Provides adequate assurance of future performance; c) compensates Owner for financial loss resulting from such defaults; d) Assumes the obligations of Contractor within the statutory time limit.

3.10. Interim Remedies

If Contractor is not performing in accordance with the program of work when any order for relief is entered, or at any subsequent time, Owner, while awaiting the decision of Contractor or its Trustee and its Surety - if any, to reject or accept the Contract, and provide adequate assurance of its ability to perform there under, may avail itself of such remedies under this paragraph as are reasonably necessary to maintain the schedule of work. Owner shall have the right to offset against any payment/s due or to become due to Contractor, all costs incurred in pursuing any of such remedies Contractor shall be liable for the payment of any amount by which such costs may exceed the unpaid balance of the moneys payable to Contractor.

3.11. Termination of Contract by Contractor:

The Contractor may terminate the Contract by giving notice in writing to the Owner if :-

Payment of the amount due to the Contractor under approved interim certificates of payment remain unpaid by the Owner for sixty (60) days after the Contractors notice in writing requiring payment.

The work under the Contract is stopped for six (6) months or more under the order of the Owner, or by any injunction or any other order of a court

or law having jurisdiction, provided only that such injunction or order was not caused by any unlawful act of the Contractor.

Then in these specific instances the Contractor shall be entitled to recover from the Owner payment for all work executed by him, and for any loss he may sustain in respect of plant or materials supplied, purchased, adapted, or prepared for the specific use of the works under this contract. In computing the amount of any such payment, the net rates contained in the final contract documentation shall be used, or where these may be inapplicable, valuation shall be made under the relevant section/s of article 9 of these General Conditions of Contract.

3.12. Cancellation of Contract Due to Death:

Where the Contractor is an individual or proprietary entity and the individual or proprietor dies, or if the Contractor is a partnership and one of the partners dies, then unless the Owner is satisfied that the legal representative/s of the individual Contractor or the proprietor or the proprietary entity or the surviving partner/s of the Partnership, is/are capable of carrying out and completing the Contract satisfactorily and in time, the Owner shall be entitled to cancel the incomplete works under this Contract, whether partially or entirely, without liability for payment of any compensation to the estate of the deceased and/or surviving partner/s, or proprietor/s, due to said cancellation.

The decision of the Owner that the legal representative/s or surviving partner/s or proprietor/s of the Contractor cannot carry out and complete the Contract satisfactorily and in time shall be final and binding on the parties. In the event of such cancellation the Owner shall not hold the estate of the deceased Contractor, or surviving partner/s, or surviving proprietor/s, liable for damages for not completing the works under the contract.

3.13. Alterations, Additions And Omissions:

3.13.1. Variation:

The Owner shall be entitled to make any variation of the quality or quantity of the works or any part thereof that may, in their opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, they shall have power to order the Contractor to do, and the Contractor shall do, any of the following:

- Increase or decrease the quantity of any work included in the Contract within the limit of 25 % of total contract value.
- Omit any item of work.
- Change the character, quality or kind of any such work.
- Change of levels, lines, position and dimensions of any works and,
- Execute additional work of any kind necessary for the completion of the works.

No such variation shall in any way vitiate or invalidate the Contract but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the Contract price.

3.13.2. Order for Variation to be in Writing

No variation shall be made by the contractor without an order in writing by the Project Manager, provided that no order in writing shall be required for increase or decrease in the quantity of any item of work where such increase or decrease is the result of the actual quantities exceeding or being less than those stated in the Bills of Quantities which are estimates. In such cases, the Contractor shall be paid only for the actual quantity of work done as certified by the Project Manager at the accepted unit item rates and no further compensation shall be allowed. Provided also that if for any reason the Project Manager shall consider it desirable to give any such order verbally, the Contractor shall comply with such order which must be followed by confirmation in writing by the Project Manager. Said verbal order shall then be deemed to be an order in writing within the meaning of this clause.

3.13.3. Extra Items

If the Contractor is required to execute any such item/ work in the course of construction for which tender rates have not been quoted by him, he must undertake such work. The rate for such additional work shall be determined by the Project Manager as per the following:

The rate to be derived from one of the quoted rates for similar item of work in the tender and if no such similar item is existing in the tender then the rates shall be based on actual observation and/or analysis of labour and materials involved in such work. For this purpose the Contractor shall submit to the Project Manager detailed analysis of the rate proposed by the Contractor supported by relevant vouchers. While fixing rates for extra items an all inclusive allowance of 20 % of the cost will be provided for Contractors overheads including taxes, profits, and establishment charges.

3.13.4. Rebate/Extra over Original item

If there is a deviation in the specification for particular item/s of the tender, the rebate/extra over the quoted rate shall generally be ascertained as follows:-

For item not covered in the schedule, the rebate/extra shall be derived based on observation/analysis of labour and materials involved in such items.

3.13.5. Claims

The Contractor shall send to the Owner's Representative an account, giving full and detailed particulars with proper analysis, of all claims for any additional expenses to which the contractor may consider himself entitled and of all extra items of work ordered by the Project Manager which he has executed, within one month of execution of such work, and no claim for payment for any such work will be considered which has not been included in such particulars. Provided always that the Project Manager shall be entitled to authorize payment to be made for any such work notwithstanding the Contractor's failure to comply with this condition, if the Contractor has at the earliest practicable opportunity notified the Project Manager in writing, that he intends to make a claim for such work.

3.14. Valuations And Payments

3.14.1. Work to be Measured

The Project Manager shall, except as otherwise stated, shall ascertain and determine by measurement the value in terms of the Contract. He shall, when he requires any part or parts of the works to be measured, give notice to the Contractor's authorized agent or representative, who shall forthwith attend or send a qualified agent to assist the Project Manager or his representative in making such measurement, and shall furnish all particulars required by either of them. Should the Contractor not attend or neglect or omit to send such agent, then the measurement taken by the Project Manager or approved by him, shall be taken to be the correct measurement of the work. If the contractor does not so attend to examine and agree such records and drawings they shall be taken to be correct. If after examination of such records and drawings, the Contractor does not agree to the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor shall, within fourteen (14) days of such examination, lodge with the Project Manager for decision by the Project Manager, notice in writing of the respects in which such records and drawings are claimed by him to be incorrect.

3.14.2. Method of Measurement

The works shall be measured in accordance with IS: 1200 (All parts), notwithstanding any general or local custom, except where otherwise specifically described or prescribed in the contract.

3.14.3. Provisional Sums

"Provisional Sum" means a sum included in the contract and so designated in the Schedule of Quantities for execution works of the supply of goods, material or services or for contingencies, which sum may be used, in whole, or in part or not at all, at the direction or discretion of the Project Manager. The Contract price shall include only such amounts in respect of the work, supply or services to which Provisional Sums relate as the Project Manager shall approve or determine. The Contractor shall when required by the Project Manager, produce all quotations, invoices, vouchers, and accounts or receipts in connection with expenditure in respect of Provisional Sums.

3.14.4. Interim Accounts:

The Contractor shall prepare and submit interim billings to the Project Manager once a month in-arrears through the Project period, provided the amount of said billing exceeds the minimum value stipulated in the Appendix to these General Conditions of Contract.

Interim billings shall be presented in a format to be agreed in advance of the fact, with the Project Manger and shall be supported by, but not necessarily limited to, detailed measurements item by item.

Any interim Certificate of payment given by the Project Manager relating to the work done or the materials delivered may be modified or corrected by any subsequent interim Certificate or the Final Certificate of payment. No certification by the Project Manager supporting an interim payment shall itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the Contract.

3.14.5. Final Account:

3.14.5.1. The Contractor shall submit his final billing to the Project Manger within three (3) months of the virtual completion of the works as certified by the Project Manager. No further claims shall be made by the Contractor or allowed by the Owner after submission of his final billing.

3.14.5.2. The final billing shall be accompanied by all substantiating documentation as required for interim billings with the addition of the following items that shall be supplied by the Contractor:-

- All written guarantees and warranties required by the Contract documents.
- Operation and Maintenance manuals and instructions for equipment and apparatus.
- All requisite 'As Built' drawings in the manner prescribed.

3.14.5.3. No payment shall be effected until full satisfaction of clause above is made by the Contractor.

3.14.5.4. The relevant sections of clause Retention Monies, shall apply to the final billing.

3.15. Settlement Of Disputes:

3.15.1. Matter to be Settled by Owner:

All disputes and differences of any kind whatsoever arising out of or in connection with Contractor whether during the progress of the works or after their completion shall be referred by the Contractor to the Owner and the Owner shall within a reasonable time after their presentation make and notify decisions thereon in writing.

The decisions, directions, classifications, measurements, drawings and certificates with respect to any matter the decision for which is specially provided for, by these or other special conditions to be given and made by the Owner or by the Project Manager on behalf of the Owner are matters which are referred to hereinafter as Excepted matters and shall be final and binding upon the Contractor and shall not be set aside on account of non-observance of any formality, any omission delay or error in proceeding in or about the same or on any other grounds or for any reason and shall be without appeal.

3.15.2. In the event of any dispute of difference between the parties hereto as to the Project or operation of this contract, or the respective rights and liabilities of the parties on any matter in question , dispute or difference on any account or as to the withholding by the Owner of any certificate to which the Contractor may claim to be entitled, or if the Owner fails to make a decision within reasonable time, then and in any such case, but except in any of the Excepted Matters referred to in the above clause, the Contractor after 90 days of his presenting his final claim on the disputed matters, may demand in writing that the dispute or difference be referred to arbitration. Such demand for arbitration shall specify the matters which are in question, dispute or difference, and only such dispute or difference other than Excepted Matters of which the demand has been made and no other dispute or difference shall be referred to the arbitration of an officer of the Owner to be nominated by the Managing Director at the relevant time being or if there is no Managing Director at the relevant time then by the Board of directors of the Owner and the provision of the Indian Arbitration Act 1940, for the time being in force or of any other Act of the Legislature passed in substitution thereof or modification thereof and for the time being in force, shall apply to such arbitration.

3.15.3. Arbitration

The Contractor shall not, except with the consent in writing of the Owner/Project Manager, in any way delay the carrying out of the work by reason of any such matter, question or dispute being referred to arbitration but shall proceed with the work with all due diligence and shall, until the decision of the arbitration is given, abide by the decision of the Project Manager and no award of the arbitrator shall relieve the Contractor of his obligation to adhere strictly to the Project Manager's instructions with regard to the actual carrying out of the work except as specifically affected by such award.

3.16. Notices:

3.16.1. Service of Notice on Contractor:

All notice to be given by the Owner to the Contractor under the terms of the Contract shall be served by sending by Registered Post or delivering the same to the Contractor's place of business or such other address as the Contractor shall nominate for this purpose.

3.16.2. Service of notice on Owner :

All notices to be given to the Owner under the terms of the contract shall be served by sending by registered post or delivering the same to the Owner's address.

3.17. Local Bodies:

The Contractor shall comply with and give all notices required under any Government Authorities, instrument, rule of order made under any Act of Parliament, State Laws, or any regulation or bye-laws of any local Authority related to the work. The Contractor shall indemnify the Owner against any liability in respect of the above , without any additional cost.

3.18. Applicable Law:

The Contract shall be governed by, construed and enforced in accordance with, the Laws of India.

Appendix

Defects Liability Period	12 Months
Period Of checking Final Measurement And Valuation	8 days
Date Of Commencement	7 days from the date of work order
Date Of Completion	45 days from the date of commencement
Liquidated Damages	1% of total contract cost per week upto a maximum of 10% of the total contract cost
Minimum Value Of Work For Interim Certificate	Rs.5 Lakhs(Rs Five Lakhs only) or one month whichever is less
Security Deposit	5% of total value of Contract (including the earnest money) to be paid immediately by demand draft or bank guarantee acceptable to Owners.
Refund of Security Deposit	Security deposit to be refunded after defect liability period of one year from the date of successful completion of work as certified by the Institute authorities.
Period Of Honoring Interim Bills	The payment would be made within 30 Days of submission of RA Bills.

SECTION 4

SPECIAL CONDITIONS

4.1. Precedence

These Special Conditions shall be read in conjunction with the General Conditions of Contract & Technical specifications. In the event of conflict between them, the special conditions shall prevail.

- a) The work shall conform to the technical specifications unless otherwise specified in individual items.
- b) Where items are not covered under technical specifications then the work shall be performed as per the current I.S. Code of Practice relevant to that work.
- c) Where items are not covered under preceding paragraphs then the work shall be performed as stipulated by the Project Manager/ relevant Consultant whose decision shall be final and binding.

4.2. Scope Of Work

4.2.1. The Plumbing works to be completed under this tender package shall generally include the following :-

- 1. Sanitary Fixtures
- 2. Soil, Waste, Vent, Rainwater Pipes & Fittings
- 3. Water Supply System
- 4. Sewerage & Storm Water Drainage

4.2.2. All liasoning costs towards obtaining NOCs, Commencement Certificates and Completion Certificates for the water supply, and drainage works within the Contractor's scope are to be born by the Contractor at no additional charge. Any fees and deposits towards the same shall however be paid by the Owners as actual. Contractors must possess a valid plumbing license for Pune jurisdiction, enabling him to obtain the permits.

4.2.3. **Co-operation with other Agencies**

4.2.4. The Contractor shall cooperate with the work of other agencies or contractors that may be employed or engaged by the Owner so far as it relates to the Contractor's work. The sequence of work shall be so arranged that the work of other agencies is enabled to progress simultaneously and in a coordinated manner.

The contractor shall program his activities of works, related to the program/progress of civil works simultaneously. He shall also ensure that the sleeves/inserts/puddles etc. related to the structure are supplied to the civil contractor well in advance and sleeves or pipes/fittings to be fixed in the structure are installed before concreting.

In the event of conflict, the decision of the Project Manager shall be final and binding.

4.3. Making holes / chasing

4.3.1. Any holes in the RCC structural member such as slab, beam or column shall be made only with prior approval from the project manager.

4.3.2. Chasing in column/beams is not permitted.

4.3.3. Chasing in masonry walls must be done with cutting machines only. Manual chasing with chisels is not permitted.

4.3.4. All holes in the slab must be done by core cutting machines only. Manual chasing with chisels is not permitted. The civil contractor shall provide the core cutting as per the directions of the plumbing contractor.

4.3.5. While chasing in walls and making holes in the walls is in contractors scope, the main civil contractor shall 'make them good'.

4.3.6. The main civil contractor shall provide the PCC/RCC foundations (and plaster) for pumps and plant as per the directions of the plumbing contractor.

4.4. Progress Reporting

The contractor shall provide the Project Manager with written reports on monthly basis. Such reports shall include but not necessarily be limited to, progress in relation to the programme and any anticipated problems that may cause delays or disruption. A format for these reports shall be approved by the Project Manager prior to issuance.

4.5. Income Tax

Owner/Employer shall deduct moneys as "Tax Deducted at Source" (TDS) as per the prevailing income tax laws and regulations from all payments to the contractor that are so subject.

4.6. Insurance

The successful contractor shall take out Contractors All Risk (CAR) insurance policy, in the name of contractor beneficiary. The original policies including subsequent extensions if any shall be deposited with the Owner/Employer. The policies shall also cover clauses as under.

The Contractor shall at all times indemnify and keep indemnified the Owner/Employer/Consultants and its officers, servants, agents and any other guest or person against all third party claims whatsoever which may arise out of or in consequence of the construction and maintenance or works, (including but not limited to property loss and damage, personal accident, injury or death of/to property or person or any Sub-Contractor and/or the servants or agents of the contractor, any sub/contractor(s) and/or the Owner/Employer and the contractor shall at his own cost and initiative at all times upto the successful conclusion of the defect liability period maintain all insurable liabilities under this Clause, including but not limited to third party insurance and liabilities under the Motor Vehicle Act, Workmen's; Compensation Act, Fatal Accidents etc, Personal Injuries Insurance Act, ESI Insurance,

Emergency Risk Insurance Act and or other Industrial Legislation from time to time in force in India with insurance Company(ies) approved by the Owner/Employer, and such policy (ies) shall be of not lesser limit than the limits here specified with reference to the matters here specified, namely.

- a) Workmen's Compensation insurance to the limit to which compensation may be payable under the laws of the Republic of India.
- b) Third Party Insurance bodily injury and property damage to the limit of contract value for all accidents at site. Provided that the limits specified above shall operate only as a specification of minimum limits for insurance purposes, but shall not in any way limit the contractor's liability in terms of this clause to the limits specified.

Should the contractor fail to take out and/or keep current, insurance as provided for in the foregoing sub clause, the Owner/Employer shall be entitled (but without obligation to do so) to take out and/or keep current such insurance at the cost and expense of the Contractor, and without prejudice to any other rights or remedies of the Owner in this behalf, to deduct the sum(s) incurred, from the dues of the contractor.

Period of policies : All insurance covers mentioned above shall be kept alive during the completion period of contract including defects liability period.

The said Insurance policies shall be lodged with the Owner/Employer's authorized representative prior to start of Contractor's work on site.

4.7. Limitation Of Space And Facilities To Be Provided

Due to the constructed nature of the project, the following limitations are imposed:-

- a) No labour camp shall be permitted on the project site. Contractor to make suitable arrangement for accommodating the labour at nearest possible location. Basic amenities like drinking water, toilets and also crèche for children of labour to be provided by contractor at his cost.
- b) Prior to locating his site offices, storage facilities, plant, Contractor shall obtain the prior approval of Project Manager for the location and extent of such facilities. Such approval shall not relieve Contractor of his obligation under the contract.

After completion of the work, the contractor shall at his own cost promptly dismantle such built up area and vacate the area after restoring the land to the original conditions.

- c) Contractor is advised that on site parking other than legitimate construction traffic for loading/unloading purposes in the designated areas shall be limited, and must have Project Manager's prior approval as to location if any.

Contractor shall immediately remove any illegally parked company or private vehicle when required by Owner/Employer/Project Manager.

4.8. Security

Contractor shall be held entirely responsible for the security and protection of the works of this contract at all times inclusive of non working hours. He shall be deemed to have included for all costs associated therewith.

4.9. Trespass

Contractor shall ensure that none of the work force or their dependents trespasses on surrounding areas other than the 'site

4.10. Safety :

Contractor shall install and maintain any and all temporary lighting, access ways, and/or safety precautions (such as guard rails, temporary covering for holes in floors etc.) that are deemed necessary for the efficient and safe execution of the works. In the event of disagreement as to the type of extent of such care, the Project Manager's decision shall be final and binding. Lack of any direction or instruction by the Project Manager shall not release Contractor from his responsibilities and obligations under this clause.

The debris generated during the period of construction shall be disposed off by the contractor at his own risk and cost. The debris shall not be thrown from the floors or through the ducts or shafts but shall be removed through trolleys/ship hoist and disposed off by mechanical transport outside the project site as directed by Project In Charge.

Maximum safety precautions shall be taken where lead caulking activities are in progress, since it has high fire hazard. Safety precautions are also necessary during transportation of CI pipes.

4.11. Hoisting, Transportation etc.

Contractor shall include for unloading, stacking and hoisting of his own materials and equipment "including" the materials/stores supplied by Owner/Employer, own scaffolding, and access equipment, clean up and rubbish disposal.

4.12. Water & Electricity

4.12.1. Water and electricity shall be supplied free of cost by the owner at one point only.

4.12.2. Any further distribution shall be arranged by the contractor at his own cost.

4.12.3. The supplies shall be limited to the time and quantum supplied by Municipal/MSEB Authority; failing which the contractor shall make his own arrangements at site. Nothing extra shall be payable for this.

4.13. Animal Clause :

The Contractor shall be responsible for all injury to persons, animals or things and for all damage to the structural and or any part of property arising out of his operations or neglect of himself or of any of his approved sub-contractor's employees, whether out of carelessness, accident or whatever cause. This clause will include buildings, roads, cables, drains, and tanks. The Contractor shall indemnify the owner and hold him harmless in respect of all any expenses arising from any such injury or damage to person or property. The Contractor shall reinstate at his cost all damages of every sort mentioned in this clause, so as to deliver the whole of the work complete and perfect in every respect and make good or otherwise satisfy all claims for damages to property of third party. The Contractor shall indemnify the owner against all claims made against the owner by any member of public or other third party arising out of his work or in consequence thereof and shall at his own cost arrange to effect and maintain until the virtual completion of the work, an insurance policy with an approved nationalized insurance company in joint names of owner and himself against such risk and deposit such policy with the Client. The contractor shall also indemnify the owner against all claims, which may be made upon the owner.

Whether under workmen's compensation act or any other against such risks. The Contractor shall be responsible for anything which may be excluded from insurance policy and also for all other negligent or defective carrying out of this contract.

The owner shall be at liberty and is hereby empowered to deduct the amount of any damages, compensation costs, charges and expenses arising from any such claims from any sum due to Contractor.

4.14. Instructions of CVC Guidelines.

[I] Average Annual financial turnover during the last 3 years ending 31st March of the previous financial year, should be at least 30% of the estimated cost.

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[II] Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following :

Three similar completed works costing not less than the amount equal to 40% of the estimated cost.

OR

Two similar completed works costing not less than the amount equal to 50% of the estimated cost.

OR

One similar completed work costing not less than the amount equal to 80% of the estimated cost.

[III] By "Similar work" it is meant here that supply, installation and testing of Plumbing, sanitary and external services work at site complete in all respect as per specifications mentioned in BOQ

4.15. Terms of Payment

4.15.1. No mobilization advance shall be paid.

4.15.2. Secured advance against materials brought to site by the contractors shall be paid. Payment of material advance shall be based on the following. Cost of materials shall be considered as 65% of item rate. If part material is received, it will not be considered for advance. 75% of cost of material shall be paid as secured advance. Thus 65% of 75% of item rate which is equivalent to say 50% of item rate shall be paid as secured advance against material at site.

Test certificates for pipes and other materials shall be submitted along with the material supplies. In addition to these, random tests for pipes and other materials (at least one for each) shall be carried out at contractor's risk and cost.

The material advance shall be recovered on consumption of material at site.

4.15.3. Final Bills

The final bill complete in all respects including material reconciliation statement, test certificates (wherever applicable) etc. shall be submitted by Contractor within one month of issue of certificates of completion, otherwise consultant's certificate of measurement including material reconciliation and total amount payable for the work accordingly shall be binding on contractor. No further claims shall be made by contractor after submission of the final bill. Claims put up by Contractor after final bill shall be deemed to have been waived and extinguished and hence shall not be considered.

SECTION 5

TECHNICAL SPECIFICATIONS

Technical Specifications For Plumbing Works

5.1 IS Codes And Reference Standards.

5.1.1 Codes and reference standards referred to in the contract shall be understood to form a part of the contract.

5.1.2 The contractor shall be responsible for adherence to reference standard requirements by subcontractors and suppliers.

5.1.3 The specified reference standards are **INDIAN STANDARD CODES (BIS)** and are intended to establish the minimum quality of materials and workmanship required for the works. Reference standards published in other countries may also be acceptable providing that the Contractor furnishes sufficient data for the Owner's Consultant to determine if the quality of materials and workmanship at least equals or exceeds all tests prescribed by the specified reference Indian Standards codes.

Such other reference standards published by the following will be considered ;

BSI	:	British Standards Institute
AFNOR	:	Association Française de Normalization (French Standards Institute)
DIN	:	Deutsche Industries Normen (German Standards)
ANSI	:	American National Standards Institute
ASTM	:	American Society for Testing and Materials

5.1.4 Should regulatory requirements or the contract conflict with specified reference standards or specifications, the more stringent in each case shall govern.

5.1.5 Contractor shall obtain copies of codes applying to the Work, manufacturer's directions and reference standards referred to in the contract within 15 days of signing the contract.

5.1.6 Contractor shall submit a copy of each code, reference standard and specification, manufacturer's directions, instructions and specifications, to which reference is made in the specification to the Owner's Authorized Representative's.

5.2 In addition to National Building Code (NBC), a reference is also made to Uniform Plumbing Code – India (UPC-I) published by Indian Plumbing Association for installation standards.

5.3 Standards, specifications, associations, and regulatory bodies are generally referred to throughout the specifications by their abbreviated

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designations. The materials workmanship shall be in accordance with the requirement of the appropriate I.S code wherever applicable together with any building regulations or bye-laws governing the works.

General Requirements

1.1 Scope of work

1.1.1 The form of Contract shall be according to the "Conditions of Contract". The following clauses shall be considered as an extension and not in limitation of the obligation of the Contractor.

1.1.2 Work under this Contract shall consist of furnishing all labour, materials, equipment and appliances necessary and required. The Contractor is required to completely furnish all the plumbing and other specialized services as described hereinafter and as specified in the schedule of quantities and/or shown on the plumbing drawings. Without restricting to the generality of the foregoing, the sanitary installations shall include the following:-

A. Plumbing works

- i) Water Supply System.
- ii) Well Water Pumping System.

Specifications

1.1.3 Work under this Contract shall be carried out strictly in accordance with specifications attached with the tender.

1.1.4 In case of items not covered under these specifications due to any ambiguity or misprints, or additional works, the work shall be carried out as per specifications of the latest Central Public Works Department.

1.2 Execution of work

1.2.1 The work shall be carried out in conformity with the Plumbing drawings and within the requirements of architectural, HVAC, electrical, structural, landscaping and other specialized services drawings.

1.2.2 The Contractor shall cooperate with all trades and agencies working on the site. He shall make provision for hangers, sleeves, structural openings and other requirements well in advance to prevent hold up of progress of the construction schedule.

1.3 Drawings

1.3.1 Plumbing drawings are diagrammatic but shall be followed as closely as actual construction permits. Any deviations made shall be in conformity with the architectural and other services drawings.

1.3.2 Architectural drawings shall take precedence over plumbing or other services drawings as to all dimensions.

1.3.3 Contractor shall verify all dimensions at site and bring to the notice of the Project Manager all discrepancies or deviations noticed. Decision of the Project Manager shall be final.

1.3.4 Large size details and manufacturers dimensions shall take precedence over small scale drawings.

1.4 Inspection and testing of materials

1.4.1 Contractor shall be required, if requested, to produce manufacturer's test certificate for the particular batch of materials supplied to him. The tests carried out shall be as per the relevant Indian Standards.

1.4.2 For examination and testing of materials and works at the site Contractor shall provide all testing and gauging equipment necessary to conduct test of materials on site and test the work done.

1.4.3 All such equipment shall be tested for calibration at any approved laboratory, if required by the Project Manager.

1.4.4 Contractor shall provide catalogues, service manuals manufacturer's drawings, performance data and list of spare parts together with the name and address of the manufacturer for all electrical and mechanical equipment provided by him.

1.4.5 All "warranty cards" given by the manufacturers shall be handed over to the Project Manager.

1.5 Reference drawings

1.5.1 The Contractor shall maintain one set of all drawings issued to him as reference drawings. These shall not be used on site. All important drawings shall be mounted on boards and placed in racks indexed. No drawings shall be rolled.

1.5.2 All corrections, deviations and changes made on the site shall be shown on these reference drawings for final incorporations in the completion 'as built' drawings. All changes to be made shall be initialed by the Project Manager or Architects.

1.6 Shop drawings

1.6.1 The Contractor shall submit to the Project Manager four copies of the final accepted shop drawings. Contractor shall ensure that shop drawing shall be prepared for specific areas solely on the basis of the latest architectural drawings. Project Managers will arrange issue of these drawings to the contractor to ensure that changes and equipment layout are planned within available space allotted for the particular equipment.

1.6.2 No shop drawings are to be submitted for general plumbing work if it is being executed as per the plumbing drawings issued by the owners or their consultants.

1.6.3 Shop drawings shall be submitted under following conditions:-

- a) Showing any changes in layout in the plumbing drawings.
- b) Equipment layout, piping and wiring diagram.
- c) Manufacturer's or Contractor's fabrication drawings for any materials or equipment supplied by him.

1.7 **Completion drawings**

1.7.1 On completion of work, Contractor shall submit "as built" drawings to the Project Manager, in the manner prescribed earlier, incorporating the changes recorded in the 'Reference Drawings'. These drawings shall have the following information.

- a) Run of all piping, pipe diameters on all floors, vertical stacks
- b) Layout plans of external services showing ground and invert levels of all drainage pipes together with location of all manholes and connections up to outfall.
- c) Run of all water supply lines with diameters, locations of control valves, access panels.
- d) Location of all mechanical equipment with layout and piping connections.
- e) System diagrams to indicate the system in its totality.

1.7.2 *No completion certificate shall be issued unless the above drawings are submitted.*

1.7.3 Contractor shall provide four sets of catalogues, service manuals manufacturer's drawings, performance data and list of spare parts together with the name and address of the manufacturer for all electrical and mechanical equipment provided by him.

1.7.4 All "warranty cards" given by the manufacturers shall be handed over to the Project Manager.

1.8 **Testing**

1.8.1 Piping and drainage works shall be tested as specified under the relevant clauses of the specifications.

1.8.2 Tests shall be performed in presence of the Project Managers or their authorized representatives.

1.8.3 All materials and equipment found defective shall be replaced and whole work tested to meet the requirements of the specifications.

1.8.4 Contractor shall provide all labour, equipment and materials for the performance of the tests.

1.9 Site clearance and cleanup

1.9.1 The Contractor shall, from time to time, clear away all debris and excess materials accumulated at the site.

1.9.2 After the fixtures, equipment and appliances have been installed and commissioned, Contractor shall clean-up the same and remove all plaster, paints, stains, stickers and other foreign matter or discoloration leaving the same in a ready to use condition.

1.10 Cutting of Water Proofing Membrane

No walls terraces shall be cut for making and opening after water proofing has been done without written approval of Project Manager/Architects.

1.11 Cutting of structural members

No structural member shall be chased or cut without the written permission of the Project Manager.

1.12 Materials

1.12.1 Unless otherwise specified and expressly approved in writing by the Project Manager, only materials of makes and specification as mentioned in the list of approved makes attached with the specifications shall be used.

1.12.2 If required, the Contractor shall submit samples of materials proposed to be used in the works. Approved samples shall be kept in the office of the Project Manager and returned to the Contractor at the appropriate time.

3 WATER SUPPLY SYSTEM

4.1 Scope of work

- 4.1.1 Work under this section consists of furnishing all labour, materials equipment and appliances necessary and required to completely install the water supply system as required by the drawings, specified hereinafter and given in the Schedule of Quantities.
- 4.1.2 Without restricting to the generality of the foregoing, the water supply system shall include the following:-
- a) Distribution system from main supply headers to all fixtures and appliances for cold water.
 - b) Cold water supply lines from city water connections to Under Ground Water Tanks and from Underground Water Tanks to Overhead water Tanks.
 - c) Pipe protection and painting.
 - d) Control valves , masonry chambers and other appurtenances.
 - e) Connections to all plumbing fixtures, tanks, appliances and municipal mains
 - f) Inserts for R.C.C. tanks

4.2 General requirements

- 4.2.1 All materials shall be new of the best quality conforming to specifications. All works executed shall be to the satisfaction of the Project Manager.
- 4.2.2 Pipes and fittings shall be securely fixed to walls and ceilings truly vertical, horizontal or in slopes as required in a neat workmanlike manner.
- 4.2.3 Short or long bends shall be used on all main pipe lines as far as possible. Use of elbows shall be restricted for short connections. All bends shall be formed by means of a hydraulic pipe bending machine for pipes up to 65mm diameter.
- 4.2.4 Pipes shall be fixed so as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passages etc.
- 4.2.5 Clamps, hangers and supports on RCC walls, columns & slabs shall be fixed only by means of approved make of expandable metal fasteners inserted by use of power drills.
- 4.2.7. G.I. pipes in shafts and other locations shall be supported by M.S. clamps of design approved by Project Manager. Pipes in wall chases shall be anchored by iron hooks, Pipes at ceiling level shall be supported on structural clamps fabricated from M.S. structural as described above. Pipes in typical shafts shall be supported on slotted angles/channels as specified elsewhere.

- 4.2.8. All pipe clamps, supports, nuts, bolts, washers shall be galvanised MS steel throughout the building.
- 4.2.9. Valves and other appurtenances shall be so located as to provide easy accessibility for operations, maintenance and repairs.

4.3. Water Supply System

- 4.3.1. Contractor should study the site plan and water supply system diagram for an overview of the system.
- 4.3.2. All internal and external water supply should be in GI 'C' class pipes and fittings.

4.4. GI pipes, fittings

- 4.4.1. All pipes inside and outside the building shall be galvanised steel conforming to I.S. 1239 Heavy Class 'C'.
- 4.4.2. Fittings shall be of approved make as per List of Approved Makes attached for malleable galvanised iron pipes. Each fitting shall have manufacturer's trade mark stamped on it. Fittings for GI pipes shall include couplings, tees, reducers, nipples, unions, bushes. Fittings shall conform to I.S.1879-(Part I to X).
- 4.4.3. Pipes and fittings shall be jointed with screwed joints. Care shall be taken to remove burr from the end of the pipe. Pipe threaded joints will be made by applying suitable grade of **Dr. Fixit/Locktite/TEFLON tape** used for drinking water supply.
- 4.4.4. All pipes shall be fixed in accordance with layout and alignment shown on the drawings. Care shall be taken to avoid air pockets. GI pipes inside toilets shall be fixed in wall chases well above the floor. No pipes be run inside a sunken floor as far as possible. Pipes may be run under the ceiling or floors and other areas as shown on drawings.

4.5. Unions

Contractor shall provide adequate number of unions on all pipes to enable easy dismantling later when required. Unions shall be provided near each gunmetal valve, stop cock, or check valve and on straight runs at appropriate locations as required or as directed by the Project manager.

4.6. Flanges

Flanged connections shall be provided on pipes as required or as shown on the drawings, all equipment connections as necessary and required or as directed by the Project Manager. Connections shall be made by the correct number and size of bolts and made with 3mm thick insertion rubber washer.

4.7. Trenches

All water supply pipes below ground shall be laid in trenches with a minimum cover of 60 cms. The width and depth of the trenches shall be as follows:-

Dia of pipe	Width of trench	Depth of trench
15 mm to 50 mm	30 cms	75 cms
65 mm to 100 mm	45 cms	100 cms

4.8. Sand filling

GI pipes in trenches shall be protected with fine sand 15 cms all round before filling in the trenches.

4.9. Painting

All pipes above ground shall be painted with one coat of red lead and two coats of synthetic enamel paint of approved shade and quality. Pipes shall be painted to standard colour code and arrows specified by Project Manager.

4.10. Pipe protection

GI waste pipes buried in chases or ground or sunken slab shall be protected with multi layer bitumen membrane tape 3mm thick with a final coat of hot or cold applied bitumen. "Pykote" or equivalent.

4.10.1. Insulation of Valves and Fittings

All valves, fittings, flanges, strainers, etc. shall be insulated in the same manner as described above. Care should be taken to ensure that no damage would be caused to the insulation when valves, fittings or strainers are being used or serviced. Insulation thickness of the above fittings shall be the same as those of the pipes connected to them.

4.11. Valves

4.11.1. Ball Valves (for branch lines < 40mm dia)

Valves up to 40 mm dia. shall be screwed type Ball Valves with stainless steel balls, spindle, teflon seating and gland packing tested to a hydraulic pressure of 20 kg / sqcm., and accompanying couplings and steel handles. (to BS 5351).

4.11.2. Gunmetal Full way valves (on-Off duty)

Valves 65mm dia and below shall be heavy gunmetal full way valves or globe valves conforming to IS 778 class 1. Valves shall be tested at manufacturer's works and the same stamped on it.

4.11.3. Gunmetal globe valves

Valves 65mm dia and below shall be heavy gunmetal globe valves conforming to IS 778 Class 1. Valves shall be tested at manufacturer's works and the same stamped on it.

4.11.4. Butterfly Valves (on pump delivery lines, branches and shut off locations)

Valves 50 mm dia and above shall be cast iron butterfly valve to be used for isolation. The valves shall be bubble tight, resilient seated suitable for flow in either direction and seal in both direction with accompanying flanges and steel handle. Butterfly valve shall be of best quality conforming to IS: 13095.

4.11.5. Non Return Valve (Slim Type)

Where specified, non return valve (swing check type) shall be provided through which flow can occur in one direction only. It shall be single door swing check type of best quality.

4.11.6. Each Butterfly and Slim Type Swing Check (NRV) Valve shall be provided with a pair of flanges screwed or welded to the main line and having the required number of galvanised nuts, bolts and washers of correct length.

4.12. Measurement

4.12.1. G.I. pipes shall be measured per linear meter (to the nearest cm) and shall be inclusive of

- ◆ All fittings e.g. Coupling, tees, bends, elbows, unions, flanges and u clamps with nuts, bolts & washers fixed to wall or other standard supports.
- ◆ Jointing with Teflon tape, or other approved method.
- ◆ Cutting holes, and chases in walls, floors, any pipe support required for pipes below ground & making good the same.

4.12.2. **Pipe Supports**

MS Fabricated supports shall be measured by weight, excluding weight of GI clamps. It shall be calculated on basis of the quantity of structural MS used from the theoretical weight of the sections. Rate quoted for supports & hangers shall be inclusive of :-

- ◆ Expandable anchor fasteners.
- ◆ Cutting holes in walls, ceilings on floors and making good where permitted.
- ◆ Nuts, bolts and washers for fixing and assembling.
- ◆ Wooden / PVC pipe saddles for vertical or horizontal runs.
- ◆ Applying one coat of red oxide and 2 or more coats of enamel paint.

4.12.3. **Valves**

Gunmetal, cast iron, butterfly and non return valves and puddle flanges shall be measured by numbers and shall include wheels / caps, GI nuts, bolts, washers and insertion gasket.

4.12.4. **Painting/pipe protection**

Painting/pipe protection shall be measured per linear metre over finished surface and shall include all valves and fittings for which no deduction shall be made. No extra payment shall be made for fittings, valves or flanges.

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Proposed Residential Buildings CCCR.**Well water supply for CCCR Building**

Sr. No	Description of items	Qty	Unit	Rate	Amount
A	External Water Supply				
1	Providing, fixing, jointing and testing in position the following heavy class (Class C) G.I. pipes conforming to IS:1239 cut to required lengths including all necessary fittings (All fittings shall conform to IS:1879 - part 1 to 10) and specials such as bends, tees, unions, reducers, flanges & plugs etc. Threading, jointing, and making proper connections including anticorrosive treatment to buried pipes by wrapping with PYPKOTE membrane applied over a coat of primer, including necessary excavation and refilling complete in all respects				
1.1	40 mm nominal bore	R/O	Meter		
1.2	50 mm nominal bore	R/O	Meter		
1.3	65 mm nominal bore	1,000	Meter		
1.4	80 mm nominal bore	R/O	Meter		
2	Providing and fixing cast brass ball valves chrome plated ball inside and hard chrome plated ball PTFE (Teflon) seal and ring and chrome plated steel centre handle with female BSP threads.as directed by the Engineer-in-Charge.				
2.1	15 mm dia	R/O	Each		
2.2	20 mm dia	R/O	Each		
2.3	25 mm dia	R/O	Each		
2.4	32 mm dia	5	Each		
2.5	40 mm dia	R/O	Each		
2.6	50 mm dia	2	Each		
3	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Tested to a pressure not less than 15 Kg/Sq.cm. Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.				
3.1	65 mm dia	2	Each		
3.2	80 mm dia	R/O	Each		
3.3	100 mm dia	R/O	Each		

Sr. No	Description of items	Qty	Unit	Rate	Amount
4	Providing & fixing gun metal horizontal flap type non return valve conforming to IS 778 and tested to a pressure not less than 15 Kg/Sqcm, Including rubber gasket, flanges, union, nuts, bolts & washers complete as required.				
4.1	50 mm dia	2	Each		
4.2	65 mm dia	R/O	Each		
4.3	80 mm dia	R/O	Each		
4.4	100 mm dia	R/O	Each		
5	Providing & Fixing Y Strainer (screwed / flanged) with stainless steel fin wire mesh perforated sheet basket with necessary flange / union nuts, bolts and washers complete as required.				
5.1	50 mm dia	R/O	Each		
5.2	65 mm dia	1	Each		
5.3	80 mm dia	R/O	Each		
5.4	100 mm dia	1	Each		
6	Providing and fixing Pressure reducing valve on down takes with pressure gauges on both inlet and outlet points				
6.1	20 mm dia nominal bore	R/O	sets		
6.2	25 mm dia nominal bore	R/O	sets		
6.3	32 mm dia nominal bore	R/O	sets		
6.4	40 mm dia nominal bore	R/O	sets		
6.5	50 mm dia nominal bore	R/O	sets		
6.6	80 mm dia nominal bore	R/O	sets		
7	Providing & fixing Auto Air vent for cold water supply risers, suitable for pressure not less than 15 Kg/Sq.cm.				
7.1	15 mm dia	R/O	Each		
7.2	20 mm dia	R/O	Each		
7.3	25 mm dia	R/O	Each		

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Proposed Residential Buildings CCCR.**Well water supply for CCCR Building****Pump Specifications**

**System I :- Submersible Well water Supply system by Hydrodynamic Pumping.
Pumping System for feeding UGT at CCCRH & Landscaping water from Well**

Sr. No	Description of items	Qty	Unit	Rate	Amount
A	System Parameters				
	Work for all pumps including supply and installation of pumps and accessories, headers and face piping, valves, electrical control panels and wiring, water level indicators, alarm system etc. complete with testing and commissioning.				
	Submersible multistage single entry pumps with CI body and SS impeller connected to vertical submersible motor for 415 volts, 3 phase, 50 cycles A.C. power supply, pump connector unit with rubber diaphragm and bend, vertical discharge pipe, guide pipe and chain in built level controller, cable complete in all respects. (Pumps shall be installed in a set of two pumps One working and One standby)				
	Submersible Domestic water Pumps	1	Set		
	Capacity 150 LPM				
	Head 40 M				
B	Pressure Vessel				
	Supplying, Installation testing & commissioning of vertically mounted MS Epoxy coated fabricated diaphragm type pressure vessel 100 litres capacity with dished ends at top & bottom with supports Suitable for system water hammer Pressure of 16 Kg/sq.cm with high quality water resistant rubber diaphragm with branches for inlet/outlet & drain connection, Complete with Air filling foot pump. Tank complete separation between water and air and no contact between water and tank compounds to avoid corrosion. Bladders suitable for sufficient elasticity to permit full expansion inside the tank to ensure better performance and longer working life.				

C	Control Panel to have following features :-				
i	Panel diagram to be get approved from electrical consultant.				
ii	MCC Motor control centres will be of tailor made design, wall / floor mounted type manufactured in factory / shop. Enclosure will be fixed type (modular draw out design), dust-tight and vermin proof having IP54 degree of protection. electrolytic copper. Separate insulated copper with bus within the board will be provided with a link between neutral and earth bus. Board shall be provided with distinct and separate earth terminals on opposite side to connect external earth conductor.				
iii	Board will be of sheet steel enclosed free standing self-supporting indoor type having front and rear doors. Minimum 2.5 mm thick cold rolled (CR) sheet steel will be used for load bearing members and 1.6 mm thick CR sheet will be used for doors and covers. Board will be provided with 75 mm high base channel, with holes drilled for grouting to foundation.				
iv	Voltmeter				
v	Phase Reversal preventer				
vi	Single phase preventer				
vii	Automatic sequence change to ensure equal run time for all pumps.				
viii	Ammeter for individual pump				
ix	Level based system for start & stop of pumps.				
x	Dry run prevention.				
xi	Over heating indication of pump motor & motor shall trip incase of overheating.				
xii	Panel shall have sufficient potential free contact for BMS compatibility.				
xiii	Application: - Pumping of water from UGR to balcany points. Pump on off operation will be Pressure dependant,				
D	cutouts				
i	on front door for mounting lamps, meters, control switches, handle etc. with inscription plate for component will be provided. Undrilled gland plate of 3 mm thick shall be provided on rear TOP of board. Cable termination chamber will be at the rear of the board.				
ii	Incoming and outgoing connections from switching devices will be brought to the cable chamber in a staggered manner for cable terminations. These connections will be supported on DMC/epoxy insulators such that external cables are not required to be connected directly to the terminals of switching devices. Detachable barriers of perforated metal sheet or minimum 4 mm thick non hygroscopic hylam sheet will be provided to prevent accidental contact with any live parts.				
iii	Board will be spray painted after rust removal, cleaning, rinsing, pickling in acid and phosphatising treatment on sheet steel with two coats of zinc rich primer and two coats of epoxy paint of approved shade.				
iv	Non rusting metallic or PVC engraved label with proper designation will be fixed on the front cover of each compartment, in addition to the name plate for entire MCC. The weight and overall dimensions (L x D x H)				
v	The The system provide with additional spare contact in the Panel/starter for Alarm indicating & connection for building Automation System.				
vi	suitable cables as required from respective Panels to Pump for complete working of the System level controllers will be provided with necessary cabling from tanks to pumps				

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Proposed Residential Buildings CCCR.**Well water supply for CCCR Building****Pump Specifications****System II :- Vertical in-line Hydro-pneumatic Pumping system
Pumping System for Ground Water Tank at CCCRH to Building Dry balcony**

Sr. No	Description of items	Qty	Unit	Rate	Amount
A	System Parameters				
i	Capacity in lps :- 2.5 lps for Domestic Water				
ii	Approximate Head in m :- 50m				
iii	Cut in Pressure in Bar :- 2 Bar				
iv	Cut out Pressure in Bar :- 3 Bar				
v	Nos - 2 Working + 1 Stanby				
vi	Maximum starts & Stopes per Hrs. - 30 nos				
vii	Diaphragm type pressure tank Capacity in lit :- 100 lit / as per calculations				
B	Specification for HPS System				
	Type Vertical multistage Inline pumps				
	Motor - Three phase				
	Nominal speed [rpm] - 2900				
	Insulation/protection class - F/ IP55				
	Material				
	Impeller - SS304				
	Pump casing - SS304				
	Pump base - Cast Iron				
	Shaft - SS304				
	Stainer - SS304				
	All cast iron components with coating for long lasting corrosion protection				
	The system shall be capable of operating automatically the 3rd stand by pump in the event of temporary heavy draw off conditions				
	Accessories :- Base plate, piping with butterfly valve, non return valve with a common header with flanged outlet for connection by client. isolating valve, pressure regulating valve & Ball cock,Suction Manifold,Delivery Manifold . Pressure gauge Range 0 to 16 Kg/cm.sq.(Size:65 mm dial with 15mm syphon & isolationcock,Glyserin field) Pressure Switch,Air Key,Dry Run Switch,Cable Jointing Kit,Cabling of all				
C	Pressure Vessel				
	Supplying, Installation testing & commissioning of vertically mounted MS Epoxy coated fabricated diaphragm type pressure vessel 100 litres capacity with dished ends at top & bottom with supports Suitable for system water hammer Pressure of 16 Kg/sq.cm with high quality water resistant rubber diaphragm with branches for inlet/outlet & drain connection, Complete with Air filling foot pump. Tank complete separation between water and air and no contact between water and tank componds to avoid corrosion. Bladders suitable for sufficient elasticity to permit full expansion inside the tank to ensure better performance and longer working life.				

D	Control Panel to have following features :-				
i	Panel diagram to be get approved from electrical consultant.				
ii	MCC Motor control centres will be of tailor made design, wall / floor mounted type manufactured in factory / shop. Enclosure will be fixed type (modular draw out design), dust-tight and vermin proof having IP54 degree of protection. electrolytic copper. Separate insulated copper with bus within the board will be provided with a link between neutral and earth bus. Board shall be provided with distinct and separate earth terminals on opposite side to connect external earth conductor.				
iii	Board will be of sheet steel enclosed free standing self-supporting indoor type having front and rear doors. Minimum 2.5 mm thick cold rolled (CR) sheet steel will be used for load bearing members and 1.6 mm thick CR sheet will be used for doors and covers. Board will be provided with 75 mm high base channel, with holes drilled for grouting to foundation.				
iv	Voltmeter				
v	Phase Reversal preventer				
vi	Single phase preventer				
vii	Automatic sequence change to ensure equal run time for all pumps.				
viii	Ammeter for individual pump				
ix	Level based system for start & stop of pumps.				
x	Dry run prevention.				
xi	Over heating indication of pump motor & motor shall trip incase of overheating.				
xii	Panel shall have sufficient potential free contact for BMS compatibility.				
xiii	Application: - Pumping of water from UGR to balcany points. Pump on off operation will be Pressure dependant,				
E	cutouts				
i	on front door for mounting lamps, meters, control switches, handle etc. with inscription plate for component will be provided. Undrilled gland plate of 3 mm thick shall be provided on rear TOP of board. Cable termination chamber will be at the rear of the board.				
ii	Incoming and outgoing connections from switching devices will be brought to the cable chamber in a staggered manner for cable terminations. These connections will be supported on DMC/epoxy insulators such that external cables are not required to be connected directly to the terminals of switching devices. Detachable barriers of perforated metal sheet or minimum 4 mm thick non hygroscopic hylam sheet will be provided to prevent accidental contact with any live parts.				
iii	Board will be spray painted after rust removal, cleaning, rinsing, pickling in acid and phosphatising treatment on sheet steel with two coats of zinc rich primer and two coats of epoxy paint of approved shade.				
iv	Non rusting metallic or PVC engraved label with proper designation will be fixed on the front cover of each compartment, in addition to the name plate for entire MCC. The weight and overall dimensions (L x D x H)				
v	The The system provide with additional spare contact in the Panel/starter for Alarm indicating & connection for building Automation System.				
vi	suitable cables as required from respective Panels to Pump for complete working of the System level controllers will be provided with necessary cabling from tanks to pumps				

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Proposed Residential Buildings CCCR.**Well water supply for CCCR Building****SUMMARY**


Sr. No	Description of items	Amount
1	External Water Supply	
2	Submersible Well water Supply system	
3	Vertical in-line Hydro pneumatic Pumping system	
	Total	



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